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ABSTRACT

Since Shapiro's introduction of Eye Movement Desensitization and Reprocessing (EMDR) in 1989, it has been a highly controversial therapeutic technique. Critical reviews of Shapiro's initial study have highlighted many methodological shortcomings in her work. And early empirical research that followed Shapiro's original study has been criticized for using small samples, using limited or nonrepresentative samples, or issues of treatment integrity. Research on EMDR has dramatically increased in both quantity and methodological rigor since the mid-1990s. Moreover, since its first appearance in the literature, EMDR has undergone a number of modifications. This article reviews key research conducted on EMDR since 1995 (using university students and war veterans), highlights issues of concern raised by researchers, and discusses the implications of these findings for the clinical counselor. (Contains 34 references.) (Author/JDM)

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Eye Movement Desensitization and Reprocessing:

A Critical Analysis

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Abstract

Since Shapiro's introduction of Eye Movement Desensitization and Reprocessing (EMDR) in 1989, it has been a highly controversial therapeutic technique. Critical reviews of Shapiro's initial study have highlighted many methodological shortcomings in her work. And early empirical research that followed Shapiro's original study have been criticized for using small samples, using limited or nonrepresentative samples, or issues of treatment integrity. Research on EMDR has dramatically increased in both quantity and methodological rigor since the mid-1990s. Moreover, since its first appearance in the literature, EMDR has undergone a number of modifications. This article reviews key research conducted on EMDR since 1995, highlights issues of concern raised by researchers, and discusses the implications of these findings for the clinical counselor.

Eye Movement Desensitization and Reprocessing: A Clinical Update

Eye Movement Desensitization (EMD) was first proposed by psychologist Francine Shapiro in 1989 as a 50-minute, single-session method of alleviating post-traumatic stress disorder (PTSD) and related traumatic memories (Shapiro, 1989). EMD was based on Shapiro's observation while walking through a park one day, that her shifting eyes appeared to end distressing thoughts (McNally, 1999). To date, the therapeutic mechanism of EMD remains unclear. However, Shapiro speculates that the saccadic eye movements produce a physiological effect that permits the brain to reprocess and synthesize fragmented traumatic information. "The rhythmic, multi-saccadic eye movements used in EMDR may be the body's natural inhibitory mechanism, similar or identical to the 'rapid eye movement' (REM) dream state of sleep, during which unconscious material surfaces and may be desensitized and integrated" (Shapiro, 1991, p. 135). Shapiro also acknowledges the possible contributions of exposure, distraction, trance, suggestion, and therapist demand as additional important treatment factors in EMD (Shapiro, 1991).

EMD appeared during a time when PTSD had been brought to the forefront by the treatment of Vietnam War veterans. Concurrently, feminists were pushing for effective treatments for victims of rape. The historic timeliness of Shapiro's reports of a 100% success rate, coupled with rigorous clinical and market promotion of the technique, made EMD the subject of intense scrutiny within a relatively short period of time (Devilly & Spence, 1999; Rogers, et al., 1999; Shapiro, 1989). During the twelve years following Shapiro's initial observations, EMD has evolved into Eye Movement Desensitization and Reprocessing (EMDR), an eight-stage therapeutic technique which includes history taking, client preparation, target

assessment, desensitization, installation, body scan, closure, and reevaluation of treatment effects (Zabukovec, Lazrove, & Shapiro, 2000).

Shapiro claims that EMDR is rapid, permanent, has many applications, and is superior to other traditional treatments (Shapiro, 1995; Shapiro, 1996; Shapiro & Forest, 1997). EMDR has been expanded to treat spiritual development, and a wide range of disorders including various anxiety disorders, body dysmorphic disorder, sexual dysfunction, obsessive-compulsive disorders, grief, nightmares, attention-deficit/hyperactivity disorder, depression, dissociative disorders, panic disorders, various phobias, and self-esteem issues (Foley & Spates, 1995; Herbert et al., 2000; Levin, Lazrove, & Kolk, 1999; Lohr, Tolin, & Lilienfeld, 1998; Muris & Merckelbach, 1997; Rogers et al., 1999). The EMDR Institute, Inc. has trained over 25,000 licensed clinicians since Shapiro's initial study in 1989 (Herbert et al., 2000).

EMDR involves instructing the client to follow the therapist's instructions resulting in left-right eye movements until a set of 10 to 20 rhythmic eye movements is completed. This was originally achieved by following the therapist's fingers moving to the extreme right and left of the client's visual field. Subjects unable to follow a moving finger were asked to shift their eyes when a finger was raised at the extreme left or right of their visual field. Later, other methods such as following the therapist's snapping fingers, or following the therapist's left-right knee taps were added as alternative approaches by Shapiro (1995). During this procedure, the client focuses on a picture that represents the memory from which they are seeking relief. They also rehearse a pre-established negative belief statement (Shapiro, 1989).

After each set of eye movements, the client provides a Subjective Units of Discomfort Scale (SUDS) rating. They are also questioned regarding any changes in the picture or belief statement. In turn, this information becomes the focus of the next cycle. This process continues

3-12 times until the client self-reports a SUDS rating of 0 or 1 after which the procedure continues for two to three additional sets while the client maintains a pre-determined positive thought along with traumatic images. The treatment concludes when the client reports a 0 to 7 on the Validity of Cognitions (VOC) scale created by Shapiro to measure the level of belief in the new, alternative thought (Shapiro, 1989).

Since its introduction in 1989, EMDR has been a highly controversial therapeutic technique. Some researchers have suggested that the clinical and marketing promotion of EMDR techniques were premature, preventing adherence to appropriate methodological procedures for evaluating its effectiveness (Acierno, Hersen, Van Hasselt, & Tremont, 1994; DeBell & Jones, 1997; Herbert & Mueser, 1995). Critical reviews of Shapiro's (1989) initial study have highlighted many methodological shortcomings in her work. Shapiro had no pre- or post-treatment objective of standardized measure for assessment of treatment. She did not use a standardized diagnosis for PTSD. She did not control for placebo effects, demand characteristics, or the novelty of the treatment. And her sample size of 22 was extremely small (DeBell & Jones, 1997; DeVilly, Spence, & Rapee, 1998; Wilson, Becker, & Tinker, 1995). Empirical research that followed Shapiro's original study have been criticized for using small samples, using limited or nonrepresentative samples, or issues of treatment integrity (Scheck, Schaeffer, & Gillette, 1998; Wilson et al., 1995).

Researchers have noted that research on EMDR has dramatically increased in both quantity and methodological rigor since the mid-1990s (DeBell & Jones, 1997; Devilly et al., 1998; Herbert et al., 2000; Lohr et al., 1998; Muris & Merckelbach, 1997; Wilson et al., 1995). Moreover, Shapiro (1995) has stated that "since it first appeared in the literature, EMDR has undergone a number of modifications, rendering the original articles obsolete" (p. 370). This

article reviews key research conducted on EMDR since 1995, discuss issues of concern raised by researchers, and discuss the implications of these findings for the clinical counselor.

Research on the Efficacy of EMDR

Foley and Spates (1995) compared EMDR with two variations of EMDR and a no-treatment control to determine the efficacy of EMDR in the treatment of public speaking anxiety. Further, they sought to determine whether eye movements were the *modus operandi*. Forty-five college students suffering from public speaking anxiety were randomly assigned to EMDR, EMDR with a moving audio stimulus replacing the eye movements, EMDR with eyes resting on the hands, or no treatment. Researchers found that EMDR was partially effective in the treatment of public speaking anxiety, however the eye movements per se were not essential to the effectiveness of the treatment. Some caution should be noted since there were no controls in place for nonspecific effects such as demand or placebo effects (Lohr et al., 1998).

Gosselin and Matthews (1995) sought to measure the effects of high- versus low-expectancy under conditions using eye movement versus no eye movements on 41 undergraduate subjects suffering from test anxiety. All subjects were treated with a one-hour session of EMDR—with or without eye movement. Some were told the treatment is highly effective, others were told the procedure was new and the results unpredictable. Those treated without eye movement were asked to look at the researcher's unmoving fingers for the approximate amount of time the eye movement group followed moving fingers. Researchers found that subjects treated with eye movement self-reported more reduction in anxiety than those treated without eye movement. There appeared to be no difference between the two groups for expectancy. Although this was the first study to attempt to control demand characteristics, a no-treatment control would have better measured nonspecific effects (Lohr et al., 1998).

Sandra Wilson and her colleagues (1995) sought to design a study aimed at addressing issues raised by critical reviews of past research on EMDR. They studied the effects of three 90-minute treatment sessions on the traumatic memories of 80 participants who were randomly assigned to either EMDR or delayed-treatment. Compared to participants whose treatment was delayed, those receiving EMDR showed a significant improvement on several dependent measures. Subsequent treatment of the delayed-treatment group showed similar effects. A 90-day follow-up revealed that the positive effects of EMDR treatment were maintained for both groups.

Although Wilson's group (1995) effectively eliminated many of the methodological weaknesses noted in earlier studies, three areas of concern are noted. First, researchers measured the efficacy of EMDR based on participant self-report. Results could have been strengthened by including overt behavioral measures such as improved sleep patterns, psychophysiologic measures, and social validation measures (Lohr et al., 1998).

Second, researchers changed the PTSD outcome measure to improve sensitivity to a change in symptomatology. Therefore, results are only an indication that EMDR is effective in treating the symptomatology of PTSD, not PTSD per se as incorrectly suggested by Shapiro (1995). Third, because subjects were aware they received delayed treatment, the potential for measurement bias was introduced (Lohr et al., 1998). Finally, participants in the study were seen through a therapist's private practice, leaving the possibility of extraneous effects to the research (Devilly et al., 1998).

Bates, McGlynn, Montgomery, and Mattke (1996) contrasted the efficacy of EMDR with no treatment on repeated measures of spider fear in 14 female university students. Data indicated that the experiment showed little to no fear reduction resulting from the EMDR treatment. They

found no significant different between the EMDR group and the control group on outcome measures.

Pitman et al. (1996) studied 17 Vietnam veterans who underwent EMDR and eyes fixed desensitization and reprocessing (EFDR). Those subjected to EFDR were instructed to tap their finger while the researcher's hand was waved in front of the subject's face. The two therapies produced modest to moderate improvement, however there was slightly more improvement in the subjects exposed to EFDR, leaving researchers to conclude that eye movements do not play a significant role in EMDR. When the results of this research were compared with a previous study conducted by the same researchers, they found that comparable amounts of emotional processing occurred with imaginal flooding, suggesting that EMDR is about as efficacious as traditional therapies used for PTSD. It is noteworthy, however, that researchers found that EMDR produced less anxiety for patients, was better tolerated, and produced fewer adverse complications.

Wilson, Silver, Covi, and Foster (1996) conducted a unique study of EMDR in which 18 subjects experiencing traumatic memories were assigned to either a single session of EMDR, EMDR with the tapping of thumbs instead of eye movements, and no treatment. The researchers found distinct changes in respiration, heart rate, systolic blood pressure and skin response consistent with relaxation. This effect suggests that one of the mechanisms of EMDR produced a relaxation response.

Lohr et al. (1998) question the design and analyses in the interpretation of the Wilson et al. (1996) study. Researchers used outdated equipment to measure blood pressure, then switched to a commercial blood pressure monitoring kit that had not been validated for research and may have been unreliable in measuring group differences. Further, the sequential administration of treatments may have compromised the effects of the random assignments. As with most other

studies reviewed, this study failed to measure for researcher expectancy effects. It is interesting to note that if the findings of this study can be replicated, they contradict Shapiro's (1995) report that finger tapping is the equivalent of eye movements since there was difference noted between the finger tapping group and the no-movement control group.

Feske and Goldstein (1997) noted that although EMDR was being promoted for the treatment of panic disorders (Shapiro, 1995), to date there had been no solid empirical research to support this claim. To test this hypothesis, researchers randomly assigned 43 outpatients diagnosed with panic disorder to either six sessions of EMDR, eye fixation exposure and reprocessing (EFER), or to a waiting list. When compared to the waiting list, researchers found that EMDR was more effective in alleviating panic and its related symptomatology. EMDR also proved to be more effective than EFER in two of the five primary measures for panic symptoms. Moreover, those treated with EMDR showed greater improvement in depression, social adjustment, and endstate functioning. Although both the EMDR and EFER groups maintained treatment gains 3 months after treatment ended, the earlier advantages noted in EMDR had dissipated. Therefore, research failed to support the usefulness of eye movement per se in the treatment of panic disorder.

Muris and Merckelbach (1997) noted that no adequate controlled study has been conducted to validate Shapiro's (1995) claim that EMDR is effective in the treatment of phobias. In response, they randomly assigned 24 spider phobic subjects to either EMDR, a 10-minute imaginal exposure, or an assessment-only waiting list. Subsequently, all groups were treated with exposure in vivo therapy. Treatment outcome was assessed using the Behavioural Avoidance Test (BAT). The test was administered pre-treatment, post-treatment, and post-in vivo. Researchers found no evidence that EMDR was more effective than the imaginal exposure group

or the waiting list group. Although researchers concluded that *in vivo* therapy was the only treatment resulting in a significant improvement, it is impossible to ascertain whether *in vivo* therapy was superior or whether the measured change resulted from an interaction with the previous treatment imposed on the participants. At best, this research suggests that neither EMDR nor imaginal exposure are effective in the reduction of spider fear (Lohr et al., 1998)

Muris, Merckelbach, Van Haaften, and Mayer (1997) compared the efficacy of EMDR to *in vivo* exposure in the treatment of 22 spider-phobic children. The children were treated with one session of EMDR and one session of *in vivo*. The results indicated both treatments resulted in statistically significant reductions in self-reports of fear. Moreover, there were no differences noted between the skin conductance levels following EMDR and *in vivo* treatment. Researchers concluded that EMDR had no additional benefits over *in vivo* treatment and that *in vivo* exposure is the treatment of choice. Internal validity of these findings was compromised because the therapist administering the EMDR was more experienced than the therapist administering *in vivo* treatment. However, this fact would not have underestimated the efficacy of EMDR (Lohr et al., 1998)

Devilly et al. (1998) studied 51 war veterans diagnosed with PTSD who were randomly assigned to one of three treatments: two sessions of EMDR, two sessions of EMDR protocol except a flashing light was substituted for eye movements, and "standard psychiatric support" (SPS). They found a reduction in symptomatology in all three groups, with no significant differences between the groups. Those participating in the treatment groups showed more reliable improvement than those in the control group. At the 6-month follow-up, no differences were noted in the two groups who received treatment. And although improvement was still significant for both groups, it had diminished to the point that remembering the trauma still

caused distress. Researchers concluded that the eye movements—a key component of EMDR—were unlikely to be the modus operandi of improvement.

Scheck et al. (1998) conducted research to evaluate the effectiveness of EMDR in reducing symptomatology and enhancing self-concept in 60 traumatized females, ages 16-25. Participants were randomly assigned to two sessions of EMDR or active listening (AL) treatment modeled after Rogerian therapy. Outcome measures indicated that the AL group showed a significant improvement, while the EMDR group showed a significantly greater pre-post change.

Because all therapists did not provide both treatments, comparison of the two groups is difficult due to therapist treatment factors such as allegiance, enthusiasm, or involvement. Researchers used only subjective verbal reports from participants; no behavioral measures were evaluated. Like the research by Wilson et al. (1995), this research did not measure the effects of EMDR on PTSD, but rather related symptomatology. Finally, there was no measure to determine whether EDMR is a unique approach or simply another behavioral exposure treatment (Herbert et al., 2000; Lohr et al., 1998).

Controversies

McNally (1999) recently noted starling parallels between EMDR and Mesmerism, a treatment developed in the 18th century by Franz Anton Mesmer. These parallels are striking in that they highlight many of the issues of concern expressed by current researchers evaluating EMDR. (1) Both techniques have the client follow the therapist's finger as it is moved back and forth in front of their face; (2) both Mesmerism and EMDR were promoted through the profitable marketing of training techniques and the establishment of professional organizations promoting its effectiveness; (3) training sessions for both Mesmerism and EMDR can be emotionally dramatic experiences for participants; (4) trainees of Mesmerism and EMDR have

been forbidden to teach techniques to others; (5) both Mesmerism and EMDR claim to be supported by prominent individuals; (6) both techniques claim the treatments have global historic significance; (7) both Mesmerism and EMDR have profited from the sale of technical aids to assist in treatment; (8) both techniques are marketed to treat a miraculous range of conditions; (9) both Mesmer and Shapiro claim the "establishment" is biased against their therapies; and (10) when Mesmerism and EMDR have been found ineffective, the developers claim their techniques have been misapplied. There is a growing body of critical analysis highlighting these and other issues of concern as they relate to EMDR.

DeBell and Jones (1997) highlight discrepancies regarding whether the practice of EMDR can harm a client. Shapiro uses the claim that inappropriate application of EMDR could have harmful effects on a client to support her claim that therapists must undergo authorized training. Yet, she supports the continued use of EMDR despite inconclusive experimental research by citing survey results that found "negative effects were no more common with EMDR than with other procedures" (Shapiro, 1995, p. 386).

Shapiro's (1989) changing ideas on the *modus operandi* of EMDR have complicated scientific research into its efficacy. Although she originally argued that "the primary component of the EMD procedure is the generation of rhythmic, multi-saccadic eye movements while the client concentrates on the memory to be desensitized" (p. 201), she now argues that eye movements per se are not necessary for EDMR to be effective (Shapiro, 1995). This shift in treatment protocol comes with no explanation. One must question what happened to that serendipitous experience in the park that led to the development of EMDR. As a result, research attempting to factor out the key elements of EMDR by treating clients with and without eye movements now essentially compares EMDR with itself. If both treatments are found to be

effective, Shapiro can claim that the results support the efficacy of EMDR (DeBell & Jones, 1997; Rosen, 1999).

Rosen (1999) suggests why Shapiro may be prompted to change her position on the importance of eye movement in EMDR.

> After all, without the 'E' and the 'M,' one is left with already established therapeutic components, namely 'D' for desensitization, and 'R' for cognitive reprocessing. In that case, specialized training by the EMDR Institute would be no more indicated than any other training in the broadly defined field of cognitive and behavioral therapies (p. 179).

Shapiro's (1989) early research presented EMDR as a simple technique that could be learned by simply reading her article and applying the techniques. She has consequently reneged on that earlier claim insisting that researchers must attend her workshops for a fee (Shapiro 1995). Consequently, any earlier research conducted by researchers who had not been trained by Shapiro has been deemed invalid due to experimenter bias or procedural errors. Yet, Shapiro continues to use this same research to support the efficacy of EMDR.

Rosen (1999) questions Shapiro's claim that researchers not trained in EMDR are guilty of being unfaithful to treatment fidelity. Shapiro (1998) originally stated that she was "convinced that enough information has been given here to achieve complete desensitization of 75-80% of any individually treated trauma-related memory in a single 50-minute session" (p. 221). Within a few short years, Shapiro retracted her statement. In 1990 she began conducting a two-day workshop after which the trainee was awarded a Certificate of Completion. And by 1991, EMDR was expanded to a Level I training after which the trainee received a Certificate of Attendance. A Level II training—a second 2-day workshop—was required to obtain the Certificate of

Completion. Shapiro implemented these changes with no data to support the need for additional training (Rosen, 1999).

> It also is unclear why EMD is portrayed as inferior to EMDR when no study subsequent to Shapiro (1989) has matched the spectacular findings found in that original report. Why, it can be asked, must one receive Level II training and be faithful to the various protocols of a more 'complex' EMDR, when all of these improvements have never been able to match the original findings? (Rosen, 1999, p. 181)

An even more confusing issue is raised by Rosen (1999) who noted that when EMDR was criticized by clinicians attending a workshop conducted by Shapiro, "Shapiro advanced the perplexing paradox that clinicians she trained were 'untrained'" (p. 176). And, although she had promised a one-session cure, she neglected to address the failure of the treatment demonstrated during the workshop. Shapiro's attitude toward the very therapists she has trained is highlighted in the following:

> Clinical observation suggests that therapists trained formally or through supervision by experienced EMDR clinicians can expect a high success rate (perhaps as much as 80-90%) for appropriately selected clients. If this level of success is not achieved, the clinician should take responsibility for becoming more skilled in the method (Shapiro, 1995, p. 339).

Thus, in one fell swoop, Shapiro's effectively blames the researcher for all research that does not support the efficacy of EMDR. This is quite presumptuous, given the relative newness of the technique and less than impressive research results noted herein.

In light of these issues, one must ask the question: Why, after 12 years of research are we still unable to reach a clear conclusion regarding the efficacy of EMDR? Is it the fault of

researchers who, in good faith, conducted research following Shapiro's guidelines? Or Shapiro, who constantly changed training and treatment standards when research fails to support the efficacy of EMDR?

Discussion

As with any new treatment protocol, the main issue is one of clinical efficacy. In this case, does EMDR do what it claims to do? Numerous researchers have expressed doubt (Acierno et al., 1994; DeBell & Jones, 1997; Foe & Meadows, 1997; Herbert et al., 2000; Herbert & Mueser, 1992; Keane, 1998; Lilienfeld, 1996; Lohr, Kleinknecht, Tolin, & Barrett, 1995; Lohr, Lilienfeld, Tolin, & Herbert, 1999; Lohr et al., 1998; Muris & Merckelback, 1997; Rosen, 1999). Clearly, no controlled study to date has replicated the Shapiro's (1989) amazing clinical results.

Nonetheless, EMDR was judged to be "empirically validated treatment" and "probably efficacious for civilian PTSD" by the APA Division 12 Task Force based on outcome studies by Rothbaum (1997) and Wilson et al. (1995) that suggests EMDR is superior to control group procedures (Corey, 2001; Herbert et al., 2000). Yet, the research reviewed herein is heterogeneous, and sometimes reaches conflicting results. It falls short of reaching the scientific conclusions one would expect of a treatment modality receiving such esteemed support.

DeBell and Jones (1997) offer sound advice to the clinician considering the use of EMDR. (1) Read the literature about EMDR before you try it to determine the best training to seek, (2) consider trying EMDR with milder phobias or moderately traumatic memories as you begin to build your skills and experience before attempted more severe phobias or traumatic memories; (3) obtain informed consent that specifically addresses the unique issues surrounding

EMDR from your clients prior to treatment; (4) collect your own data and share that information with others.

Rosen (1999) captures the issues facing the clinician contemplating employing EMDR in their own practice:

> One day, clinicians may find themselves in front of reasonable fellow citizens, having to explain why they waved fingers in front of a patient's face, when studies failed to support the miraculous claims made in the late 1980s by the founder of EDMR. When that moment comes, a clinician who opines that published studies lacked fidelity is unlikely to prevail (p. 183).

References

Acierno, R., Hersen, M., Van Hasselt, V. B., & Tremont, G. (1994). Review of the validation and dissemination of eye-movement desensitization and reprocessing: A scientific and ethical dilemma. Clinical Psychology Review, 14(4), 287-299.

Bates, L. W., McGlynn, F. D., Montgomery, R. W., & Mattke, T. (1996). Effects of eye-movement desensitization versus no treatment on repeated measures of fear of spiders. Journal of Anxiety Disorders, 10(6), 555-569.

Corey, G. (2001). Theory and practice of counseling and psychotherapy (6th ed.). California: Brooks/Cole.

DeBell, C. & Jones, R. D. (1997). As good as it seems? A review of EMDR experimental research. Professional Psychology: Research and Practice, 2, 153-163.

DeVilly, G. J. & Spence, S. J. (1999). The relative efficacy and treatment distress of EMDR and a cognitive-behavior trauma treatment protocol in the amelioration of posttraumatic stress disorder. Journal of Anxiety Disorders, 13(1-2), 131-157.

DeVilly, G. J., Spence, S. J., & Rapee, R. M. (1998). Statistical and reliable change with eye movement desensitization and reprocessing: Treating trauma within a veteran population. Behavior Therapy, 29, 435-455.

Feske, J. & Goldstein, A. J. (1997). Eye movement desensitization and reprocessing treatment for panic disorder: A controlled outcome and partial dismantling study. Journal of Consulting and Clinical Psychology, 65(6), 1026-1035.

Foa, E. B. & Meadows, E. A. (1997). Psychosocial treatments for posttraumatic stress disorder: A critical review. Annual Review of Psychology, 48, 449-480.

Foley, T. & Spates, C. R. (1995). Eye movement desensitization of public-speaking anxiety: A partial dismantling. Journal of Behavior Therapy & Experimental Psychiatry, 26(4), 321-329.

Gosselin, P. & Matthews, W. J. (1995). Eye movement desensitization and reprocessing in the treatment of test anxiety: A study of the effects of expectancy and eye movement. Journal of Behavior Therapy & Experimental Psychiatry, 26(4), 331-337.

Herbert, J. D., Lilienfeld, S. O., Lohr, J. M., Montgomery, R. W., O'Donohue, W. T., Rosen, G. M., & Tolin, D. F. (2000). EMDR Science and Pseudoscience. Clinical Psychology Review, 29(8), 945-971.

Herbert, J. D. & Mueser, K. T. (1992). Eye movement desensitization: A critique of the evidence. Journal of Behavior Therapy and Experimental Psychiatry, 23, 169-172.

Keane, T. M. (1998). Psychological and behavioral treatment of posttraumatic stress disorder. In P. Nathan & J. Gorman (Eds.), Guide to treatments that work (pp. 398-407). Oxford: Oxford University Press.

Levin, P., Lazrove, S., & Van Der Kolk, B. (1999). What psychological testing and neuroimaging tell us about the treatment of posttraumatic stress disorder by eye movement desensitization and reprocessing. Journal of Anxiety Disorders, 13(1-2), 159-172.

Lilienfeld, S. O. (1996, January/February). EMDR treatment: Less than meets the eye? Skeptical Inquirer, 25-31.

Lohr, J. M., Kleinknecht, R. A., Tolin, D. F., & Barrett, R. H. (1995). The empirical status of the clinical application of eye movement desensitization and reprocessing. Journal of Behavior Therapy & Experimental Psychiatry, 26(4), 285-302.

Lohr, J. M., Lilienfeld, S. L., Tolin, D. F., & Herbert, J. D. (1999). Eye movement desensitization and reprocessing (EMDR): An analysis of specific vs. nonspecific treatment factors. Journal of Anxiety Disorders, 13, 185-207.

Lohr, J. M., Tolin, D. F., & Lilienfeld, S. O. (1998). Efficacy of eye movement desensitization and reprocessing: Implications for behavior therapy. Behavior Therapy, 29, 123-156.

McNally, R. J. (1999). EMDR and mesmerism: A comparative historical analysis. Journal of Anxiety Disorders, 13(1-2), 225-235.

Muris, P. & Merckelbach, H. (1997). Treating spider phobics with eye movement desensitization and reprocessing: A controlled study. Behavioural and Cognitive Psychotherapy, 25, 39-50.

Muris, P., Merckelbach, H., Van Haaften, H., & Mayer, B. (1997). Eye movement desensitisation and reprocessing versus exposure in vivo: A single-session crossover study of spider-phobic children. The British Journal of Psychiatry, 171, 82-86.

Pitman, R. K., Orr, S. P., Altman, B., Longpre, R. E., Poire, R. E., & Macklin, M. L. (1996). Emotional processing during eye movement desensitization and reprocessing therapy of Vietnam veterans with chronic posttraumatic stress disorder. Comprehensive Psychiatry, 37(6), 419-429.

Roger, S., Silver, S. M., Goss, J., Obenchain, J., Willis, A., & Whitney, R. L. (1999). A single session, group study of exposure and eye movement desensitization and reprocessing in treating posttraumatic stress disorder among Vietnam war veterans: preliminary data. Journal of Anxiety Disorders 13(1-2), 119-130.

Rosen, G. J. (1999). Treatment fidelity and research on eye movement desensitization and reprocessing (EMDR). Journal of Anxiety Disorders, 13(1-2), p. 173-184.

Rothbaum, B. O. (1997). A controlled study of eye movement desensitization and reprocessing in the treatment of posttraumatic stress disordered sexual assault victims. Bulletin of the Menninger Clinic, 61, 1-18.

Scheck, M. M., Schaeffer, J. A., & Gillette, C. (1998). Brief psychological intervention with traumatized young women: The efficacy of eye movement desensitization and reprocessing. Journal of Traumatic Stress, 11(1), 25-44.

Shapiro, F. (1989). Efficacy of the eye movement desensitization procedure in the treatment of traumatic memories. Journal of Traumatic Stress, 2(2), 199-223.

Shapiro, F. (1991). Eye movement desensitization and reprocessing procedure: From EMD to EMD/R—a new treatment model of anxiety and related traumata. The Behavior Therapist, 14, 133-136.

Shapiro, F. (1995). Eye movement desensitization and reprocessing: Basic principles, protocols, and procedures. New York: Guilford Press.

Shapiro, F. (1996). Eye movement desensitization and reprocessing (EMDR): Evaluation of controlled PTSD research. Journal of Behavior Therapy and Experimental Psychiatry, 27, 209-218.

Shapiro, F. & Forrest, M. S. (1997). EMDR: The breakthrough therapy for overcoming anxiety, stress, and trauma. New York: Basic Books.

Wilson, S. A., Becker, L. A., & Tinker, R. H. (1997). Fifteen-month follow-up of eye movement desensitization and reprocessing (EMDR) treatment for posttraumatic stress disorder and psychological trauma. Journal of Consulting and Clinical Psychology, 63, 928-937.

Wilson, D. L., Silver, S. M., Covi, W. G., & Foster, S. (1996). Eye movement desensitization and reprocessing: Effectiveness and autonomic correlates. Journal of Behavior therapy & Experimental Psychiatry, 27(3), 219-229.

Zabukovec, J., Lazrove, S., & Shapiro, F. (2000). Self-healing aspects of EMDR: The therapeutic change process and perspectives of integrated psychotherapies. Journal of Psychotherapy Integration, 10(2), 189-206.